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COMPARISON OF HARVEST TECHNIQUES ON GRAIN YIELD OF WINTER CANOLA

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INTRODUCTION

Two methods of harvesting Canola are available to producers, direct combining or swathing followed by combining. Direct combining is less costly than swathing, but is more risky because of potential shatter loss during the dry down period. Swathing increases harvest costs, but reduces the risk of shatter loss and makes harvest more timely. Current recommendations are to direct combine when seed is at 9 percent or less water content or to swathe when the bottom one third of pods have brown seed. Comparisons of direct combining and swathing are needed to develop regional recommendations for harvesting.

METHODS

Arabella winter Canola (*Brassica napus*) was sown in a randomized complete block experiment with four replications on 27 September 1994. Treatments are described in Table 1. Plots (8 X 40 ft) were sown at a seeding rate of 7 lb/acre using a John Deere HZ drill with 14-inch row spacing. Soil type was a Walla Walla silt loam, 0-2 percent slope. Nitrogen fertilizer was applied as anhydrous ammonia in June 1994 at 70 lb N/acre, and as dry ammonium nitrate as topdress on 28 February 1995 at 30 lb N/acre.

Spodnam was applied June 26 at 1 pint/acre in 50 gallons of water. Agitation was applied to appropriate treatments prior to combining by passing a horizontal, hand-held, 1-inch diameter wooden rod through the crop canopy. Swathing was done with a Swift Current swather with a 5-foot header. A Hege 140 combine at nominal settings of 900 RPM cylinder and fan speed, and 3/16-inch concave clearance was used for harvest.

Seed loss was measured by placing two 4 X 45-inch sheet metal trays with 1-inch high sides in each plot during combining. Trays were inserted in the interior of plots by sliding them between the rows. Reported seed loss was computed by extrapolating weight of seed collected per unit of tray area to a rectangular area of 2.5 X 40 feet. This is the area the combine separator covers as it travels through the plot.

Table 1. Harvest techniques used on winter Canola, Pendleton Oregon, 1995.

	Date	
Treatment	Swath	Combine
Swath first brown seed	30 June	11 July
Swath 1/3 brown seed	10 July	19 July
Swath 2/3 brown seed	13 July	19 July
Direct Harvest		17 July
No Spodnam		
Not Agitated		
Direct Harvest		19 July
No Spodnam		
Agitated		
Direct Harvest		17 July
Spodnam		
Not agitated		
Direct Harvest		19 July
Spodnam		
Agitated		

RESULTS AND DISCUSSION

Yields and seed losses were variable and inconsistent among the treatments (Table 2). Care must be used when

interpreting these data. The only clear result is that swathing at first brown seed consistently yielded less than other treatments. Harvest at this crop stage generally yielded about 20 percent less than the other treatments. The obvious conclusion is that this stage is too early to swathe. Apparently, seed is not sufficiently mature to ripen without further plant metabolism. Swathing too early limits seed maturity and reduces yield.

Table 2. Yield and seed loss from various harvest treatments of Arabella winter Canola at Pendleton, Oregon, 1995.

Treatment	Yield lb/acre	Seed Loss lb/acre
Swath first brown seed	1082	155
Swath 1/3 brown seed	1559	205
Swath 2/3 brown seed	1521	154
Direct Harvest No Spodnam Not Agitated	1402	168
Direct Harvest, No Spodnam Agitated	1632	94
Direct Harvest Spodnam, Not Agitated	1293	170
Direct Harvest Spodnam Agitated	1526	133
LSD (p = 0.05)	372	NS

Yields in other treatments were statistically equal. This means that we were not able to distinguish differences in yield from swathing versus direct combining, application of Spodnam versus no application, or canopy agitation versus no agitation. We speculate that the lack of difference between swathing and direct harvest is the result of plot size and timing of harvest. Because our experimental plots are comparatively small in relation to grower's fields, we were able to have timely harvest for all treatments. If harvest is always timely, it is reasonable to expect little difference in yield between swathing and direct harvest. Also note that there was no difference in time of harvest between swathing and direct cutting (Table 1). This would not likely be the case in commercial fields.

We feel the lack of differences in yield with or without Spodnam, or with or without agitation resulted from random yield variation across the plots and the lack of our ability to correctly measure seed loss and shatter. Because of the methods used to collect lost seed, we think most loss resulted from combining and not pod shatter. Plots that received no Spodnam and those that were agitated may be losing more seed than other treatments, but seed losses from the combine may be overwhelming these differences.

We plan to repeat this experiment to get additional data on harvest treatments. The method used to measure seed loss will be changed to more clearly separate loss due to shatter and combining. At this time, we recommend swathing no earlier that one third brown seed. We also see no advantage to swathing versus direct cutting, if both are done on a timely basis. However, swathing may improve harvest timeliness in commercial fields because it can be done more quickly and evens crop maturity. From our data, we are unable to comment on the usefulness of Spodnam.